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09/676,743	09/29/2000	John C. Adler	M-9080 US	2291

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EXAMINER
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ELALLAM, AHMED

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/676,743

Applicant(s)

ADLER, JOHN C. *JA*

Examiner

AHMED ELALLAM

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5, 6 and 8, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu, US (5,412,652) in view of Takatori, US (5,550,805), hereinafter referred to as Lu and Takatori respectively.

Referring to claim 1, Lu discloses a method for a communications network including a protect channel transmitting protect channel data (protection channels that transmit extra traffic (see figure 5 and column 8 lines 24-40) and working channel transmitting working channel data (a working channel that transmits normal traffic (see figure 5 and column 8 lines 24-40)), the method comprising transmitting the working channel data via the protect channel upon a disruption in the working channel (when the working traffic fails the protection traffic is preempted (see column 8 lines 24-40)), and restoring the transmitting of protected channel data (when the failure has been rectified, full recovery is realized through the use of the ring table (see column 13 lines 61 through column 14 line 3)), wherein restoring includes applying a restoration protocol to the communications network to restore the transmittal of the protect channel data (a protocol is used to recovery from the failure and the network is restored to its previous

state, thus the protect channel is restored (see column 13 lines 61 through column 14 line 3)).

Lu does not disclose that the restoration protocol is a 'mesh' restoration protocol.

However, Takatori discloses a failure restoration system wherein a failure is restored using a mesh restoration protocol (see abstract and figures 1-4).

Therefore, It would have been obvious to one skilled in the art at the time of the invention to implement this type of network restoration protocol in Lu because mesh networks are very reliable since each node is connected to all other nodes and thus many protection paths can exist.

Referring to claim 2, Lu discloses the system discussed above. Lu does not disclose that the mesh restoration protocol is a distributed mesh restoration protocol.

However, Takatori disclose a distributed mesh restoration protocol (see figures 1-4). It would have been obvious to one skilled in the art at the time of the invention to implement this feature into Lu because distributed restoration is more reliable than centralized restoration because if a node of a distributed restoration fails there are still other nodes that can perform the restoration.

Referring to claims 3, 5, 6 and 8, Lu discloses the system discussed above. Furthermore, Lu discloses that the protect channel data is at least one of video, voice and data (the protect channels transmit extra traffic (see column 8 lines 24-40)).

wherein the communications network is one of a Synchronous Optical Network (SONET) and a Synchronous Digital Hierarchy (SDH) (the Lu system is implemented in a SONET system (see abstract)).

wherein the communication network includes a plurality of interconnected nodes, the interconnected nodes having at least one of a working channel and a protect channel (the network nodes include working and protecting channels (see figures 1 and 2));

wherein the mesh restoration protocol includes communicating status and control messages across a physical network layer of the communication network (the ring tables are transmitted among the network nodes for restoring the network, this is inherently done using the physical layer (columns 13 and 14)).

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Takatori and further in view of Nemoto US (5,506,833), hereafter referred to as Nemoto.

Referring to claim 4, Lu discloses the system discussed above. Lu does not disclose that the restoring further includes finding one or more alternate channels to transmit the protect channel data, the one or more alternate channels including connected working and protect channels. However, Nemoto discloses a system wherein protection channel data is restored by transmitting the disrupted protect channel data on a secondary spare channel (see item 40 of figure 11). It would have been obvious to one skilled in the art at the time of the invention to implement this feature into Lu because doing so would make Lu more reliable. Namely, if the protect channels of Lu are disrupted there would be a secondary spare channel, as taught in Nemoto, to

further process the protect channel traffic.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Takatori and further in view of Shah et al, US (5,646,936), hereafter referred to as Shah.

Referring to claim 7, Lu discloses the system discussed above. Lu does not disclose that the plurality of interconnected nodes transmits a disruption signal upon receiving a signal indicating the disruption, the disruption signal flooding the communication network to determine alternate routes for the protect channel data.

However, Shah discloses of a path restoration technique wherein when a link disruption takes place alternate paths are set up through the use of flooding the network with messages about the disruption (see figure 1 and column 1 lines 51-63). It would have been obvious to one skilled in the art at the time of the invention to implement this feature in the system of Lu because doing so would make Lu more robust since it would exhaust efforts in finding alternate routes and not rely on a single alternate route.

4. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Takatori and further in view of Shioda et al, US (5,537,393), hereafter referred to as Shioda.

Referring to claims 9-11, Lu discloses the system discussed above. Lu does not disclose that the status and control messages are communicated using SONET frame overhead bytes, out-of-band communications channels or a distributed routing protocol.

However, Shioda discloses a system wherein a restoration protocol is implemented to restore protection channel data (see column 7) and wherein status and control information is communicated in frame overhead bytes (see column 7), which can be considered out-of-band channels and which are inherently designated (distributed) according to a protocol (see columns 7 and 8). It would have been obvious to one skilled in the art at the time of the invention to implement these features into Lu because communicating this information out-of-band, in overhead byte and according to a distribution protocol would make Lu more bandwidth efficient and resourceful.

5. Claims 12-18, 20-25 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shioda in view of Takatori.

Referring to claims 12, 21 and 29, Shioda discloses an apparatus disposed in a communication network having a protect channel and a working channel (a node in a network that has working and protection lines (see figure 1)), the apparatus comprising a node controller (the nodes have CPUs (see column 4 lines 25-33)), a route processor coupled to the node controller, the route processor implementing a restoration protocol (the nodes performs the restoration of working and protection lines (see columns 7 and 8)), a circuit coupled to the node controller and the route processor, the circuit including a logic gate for receiving signals identifying disruptions in transmissions in the protect channel and the working channel (a AIS generator and comparator identify disruptions in the working and protection paths (see columns 7 and 8)), a switch responsive to the signals identifying disruptions in transmissions in the protect channel and the working

channel (the data from the working path is switched to the protection path (see columns 7 and 8)), the switch communicating the route processor to implement restoration of protect channel data (the data is switched from the working and or protection lines to other working and/or protection lines (see columns 7 and 8)).

Shioda does not disclose that the restoration protocol is a 'mesh' restoration protocol.

However, Takatori discloses a failure restoration system wherein a failure is restored using a mesh restoration protocol (see abstract and figures 1-4). It would have been obvious to one skilled in the art at the time of the invention to implement this type of network restoration protocol in Shioda because mesh networks are very reliable since each node is connected to all other nodes and thus many protection paths can exist. Note regarding claim 29, Shioda does not disclose that the system is implemented in a program. However, it would have been obvious to one skilled in the art at the time of the invention to implement the Shioda system in this manner because the developmental costs of a software implementation are less than that of a hardware based implementation. Furthermore, software is easier to upgrade than hardware.

Referring to claim 13, Shioda discloses the system discussed above. Furthermore, Shioda discloses that the circuit is coupled to at least one line card, the line card transmitting the signals identifying disruptions in transmissions in the protect channel and the working channel (the AIS signals are transmitted over the working and protection lines to indicate disruptions, note the circuits are inherently implemented on cards (see columns 7 and 8 and figure 7)).



Referring to claim 14, Shioda discloses the system discussed above. Furthermore, Shioda discloses that the circuit includes an input/output circuit for receiving instructions identifying criteria for applying mesh restoration to protect channel data (when the ID's donnot match the path is considered disrupted, thus this is the criteria used (see columns 7 and 8 and figure 7)).

Referring to claim 15, Shioda discloses the system discussed above. Shioda does not disclose that the criteria are a function of the type of data being transmitted as the protect channel data. However, It would have been obvious to one skilled in the art at the time of the invention to base the criteria on data type because different data types have different transmission requirements (e.g. voice data requires low delay), thus basing the criteria on the data type in Shioda will make Shioda more flexible and reliable.

Referring to claims 16-18, 20, 22-25 and 28, Shioda discloses the system discussed above. Furthermore, Shioda discloses that the protect channel data includes at least one of voice, video and data (data is transmitted in the SPE of the frames of the system (see figure 1));

wherein the communications network is one of a Synchronous Optical Network (SONET) and a Synchronous Digital Hierarchy (SDH) (the system uses the SONET protocol (see abstract and figure 1));

wherein the communication network includes a plurality of interconnected nodes, the interconnected nodes having at least one of a working channel and a protect channel (the network has interconnected nodes and working and protection channels

(see figure 1)).

wherein the route processor implements a mesh restoration protocol that includes communicating status and control messages across SONET overhead bytes of the communication network (the Shioda system uses overhead bytes to implement the protection system (see columns 7 and 8));

wherein the means for restoring further includes means for finding one or more alternate channels to transmit the protected channel data, the one or more alternate channels including connected working and protect channels (the PCA data can be rerouted over another protection path or over a working path of another subscriber (see columns 7 and 8 and figure 7));

wherein the apparatus includes a plurality of circuits disposed in a plurality of linked nodes, each circuit coupled to a node controller associated with one of the plurality of linked nodes (the nodes comprise many circuits and are in a network of linked nodes and the nodes have CPUs (see figures 2 and 7)).

Referring to claim 27, Shioda discloses the system discussed above. Shioda does not disclose that the apparatus is in a management bay with a plurality of other cards. However, It would have been obvious to one skilled in the art at the time of the invention to implement the nodes of Shioda in this fashion because doing so would give network technicians a well-confined and organized way of performing operation, testing, repairing and maintenance operations, thus making the Shioda system more user friendly. This is particularly important in Shioda because since disruptions are occurring it is important to repair the network elements that are malfunctioning and causing these

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disruptions as quickly as possible, thus implementing nodes in this well-confined and organized manner will help improve the timing and quality of such repairs.

6. Claims 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shioda in view of Takatori and further in view of Shah.

Referring to claims 19 and 26, Shioda discloses the system discussed above. Shioda does not disclose that the plurality of interconnected nodes transmits a disruption signal upon receiving a signal indicating the disruption, the disruption signal flooding the communication network to determine alternate routes for the protect channel data. However, Shah discloses of a path restoration technique wherein when a link disruption takes place alternate paths are set up through the use of flooding the network with messages about the disruption (see figure 1 and column 1 lines 51-63). It would have been obvious to one skilled in the art at the time of the invention to implement this feature in the system of Shioda because doing so would make Shioda more robust since it would exhaust efforts in finding alternate routes and not rely on a single alternate route.

### **Response to Arguments**

7. Applicant's arguments filed 11/26/2004 have been fully considered but they are not persuasive.

Lu in view of Takatori:

On pages 8 and 9, the Applicant argues that Lu doesn't show, teach or suggest

**“restoring the transmittal of protect channel data”**. Examiner respectfully disagrees.

Lu teaches that when a working path fails the data is then transmitted on a protection path (see column 8 lines 24-40), the transmittal of data on the protection path in case of the working path failure is interpreted as being the claimed **“restoring the transmittal of protect channel data”**. Examiner, given the broadest reasonable interpretation of the claim limitation, believes that the ability to transmit data on the protection path upon failure of the working path reads on the claimed limitation. Examiner notes that the argument with reference to the “extra traffic” is not related to the claimed subject matter. Examiner notes that claim 1 recites: “A method for a communications network including a protect channel transmitting protect channel data and working channel transmitting working channel data, the method comprising: transmitting the working channel data via the protect channel upon a disruption in the working channel, and restoring the transmitting of the protect channel data..” . It is clear from the claim language that these limitations are met by the teaching of Lu, because the feature of “transmitting the working channel data via the protect channel” is equivalent to “transmitting the protect channel data on the protect channel” because, any traffic on the protect channel is considered “a protect channel data”; for similar reasons, the feature of transmitting the working traffic of Lu on the protection path in case of failure is considered equivalent to the claimed restoring the transmittal of protect channel data.

Applicant argues that *“Takatori does not remedy the foregoing deficiencies of Lu. Takatori discloses a network with spare capacity that is used to carry working data when the working capacity experiences a transmission failure, otherwise, the spare*

*capacity does not usually transmit data. (column 2, lines 5-7). Because the spare capacity does not usually carry extra data, Takatori could not be expected to, and in fact, does not show, teach or suggest the need to restore data being transmitted on the spare capacity. Therefore, neither Takatori nor Lu shows, teaches, or suggests restoring the transmittal of protect channel data, wherein the restoring includes: applying a mesh restoration protocol to the communications network to restore the transmittal of the protect channel data," as claimed in claim 1".* Examiner respectfully disagrees, Applicant is erroneously equating the extra traffic of Lu with the claimed "restoring of transmitting the protected traffic". Examiner notes that in choosing the protection path of Lu in case of the working path failure, it would be more desirable to choose a protection path using the mesh restoration protocol, since this protocol provides the most optimum route for traffic protection (protected traffic). Such feature is considered "a knowledge generally available to one of ordinary skill in the art" and does not need to be taught by neither Lu nor Takatori. Applicant is referred to his own admission of the "mesh restoration protocol" as prior art, see specification page 3, lines 23-30 and page 4, lines 1-10. Again, it should be recognized that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)>d *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Shioda in view of Takatori:

Regarding combination of Shioda in view of Takatori, the Applicant contends that Shioda does not teach restoring "protect channel data" and rather Shioda teaches that "an erroneous channel connection resulting in a protect channel data being sent to the wrong destination". The Examiner respectfully disagrees. Shioda discloses that the protection line is connected to the working path of another subscriber when failure occurs (see column 7 lines 42-55), thus indeed the data on that protection line can still be considered as restored since the protection line data is transmitted on the working path. Note this connection of the protection path to the working path is called erroneous by Shioda because in the prior art the AIS signal is not transmitted properly. Shioda cures this deficiency of the prior art by implementing the redundant circuitry shown in figure 7 (see figure 7 and column 8 lines 1-5). What is important is the restoration of data upon failure by the system of Shioda, as required by the claimed limitation.

Applicant argues "*there is no motivation to combine Takatori with Shioda to provide "mesh restoration of protection channel data"*". Examiner respectfully disagrees, Examiner believes that Takatori in combination with Shioda teaches the invention as recited by claim 12 for similar reasons indicated above with reference to Takatori in view Lu. Because the mesh restoration protocol is well known in the art, and have the advantage of shared protection bandwidth (as admitted in the specification), a skilled artisan would implement various steps of the mesh protocol in the protection of traffic upon failure in a working link of Shioda, given the choice of links given by the mesh protocols.

Lu in view of Takatori and Nemoto:

Applicant argues: *"Nemoto discloses a system with a 'secondary spare unit'. As shown in Fig. 11 of Nemoto, the secondary spare unit is not a channel within "one or more alternate channels" including connected working and protect channels." Nemoto's alternate channels include the spare channels and the secondary spare channel, but not the working channels"*. Examiner respectfully disagrees, Nemoto discloses on column 2, lines 10-21 the following:

**" there is provided a redundantly constructed PCA transmission apparatus having current units and spare units. This PCA transmission apparatus comprises the current units for transmitting work data, the spare units for transmitting PCA data, a switching control unit for detecting alarm from the current units or the spare units, the switching unit being provided with a selector for selecting a line of the current units or the spare units, and a secondary spare unit for transmitting the work data or the PCA data when any one of the current units or the spare units fails"**. Examiner interpreted the selection of the line for the work data or the PCA data (protected data) as being the claimed "restoring further includes finding one or more alternate channels to transmit the protect channel data, the one or more alternate channels including connected working and protect channels". (Note: PCA stands for Protect channel access which corresponds to Applicant protect data channel).

Examiner notes that the term “channel” as claimed has broad meaning, for example, in the specification, page 19, lines 20-26, it is stated:

**“More specifically, block 650, in one embodiment, includes finding one or more alternate channels to transmit the protect channel data, the one or more alternate channels including connected working and protect channels. The alternate channels may include a plurality of interconnected nodes, such as those found in a ring formation with at least one of a working channel and a protect channel. Thus, protect channel data may be transmitted over working channels”**

It follows from this passage that the working channel is used for the protect channel data, while in the base claim 1, it is recited “transmitting the working channel data via the protect channel upon a disruption in the working channel”. What is not clear is that the working channel is disrupted, while still using “the working channel” in transmitting the “protected data” as indicated by claim 4. Applicant is required to clarify the language of claim 4, otherwise it would be subject to 112 2<sup>nd</sup> paragraph rejection as being indefinite, since the working channel in claim 4, is understood to be disrupted as necessitated by base claim 1.

It is also noted that Applicant didn’t argue the meaning of “the restoring the transmitting of the protect channel data” along his argument with regard to the prior art references. Applicant solely referred to the prior art references singularly or in combination as not teaching or suggesting “restoring the transmitting of the protect channel data”. Stated differently, Applicant didn’t elaborate on the restoration mechanism, for example, it is not clear from the claim limitations (as in claim 1) why the



protect channel data has to be restored? Since the working channel data is already transmitted on the protect channel, this working channel data is understood to be the same as the "the protect channel data" because it is transmitted on the protect channel, thus "restoring" does not provide any further meaning over the "transmitting" of the "protect channel data".

Examiner believes given the broadest reasonable interpretation of claim limitations, the rejections above are proper.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Eslambolchi, US (6,370,110); Baniewicz et al, US (6,512,740); Chaudri et al, US (6,587,235); Rooda et al, US (6,643,464); Elahmadi et al, US (6,735,392); Finn et al, US (6,728,205); Agrwal et al, US (6,763,190); Swinkels et al, US (6,795,394).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to AHMED ELALLAM whose telephone number is (571) 272-3097. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou Hassan can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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AHMED ELALLAM  
Examiner  
Art Unit 2662  
February 14, 2005



JOHN PEZZLO  
PRIMARY EXAMINER